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PATENT
1163-0214P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant:	Toshiaki SHIMADA, et al.	Conf.:	4920
Appl. No.:	09/210,775	Group:	2613
Filed:	December 14, 1998	Examiner:	Allen C. Wong
For:	MOVING PICTURE ENCODING SYSTEM		

RESPONSE TO PTO COMMUNICATION DATED MARCH 16, 2006

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

April 17, 2006

Sir:

In reply to the Communication dated March 16, 2006, Appellants hereby submit a corrected Appendix of Claims in accordance with instructions received in the Communication.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad J. Billings (Reg. No. 48,917) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Corrected Appendix For Appeal Brief

Claim 1. A moving picture encoding system for encoding each picture included in a sequence of moving pictures in units of a unit group comprised of a plurality of pictures including said each picture, said system comprising:

encoding control means for, when said unit group includes a plurality of different types of pictures which are to be encoded with different encoding methods, setting a target quantizer step size used to encode each of the different types of pictures included in said unit group, and for performing a control operation to generate and furnish a quantizer step size so that a ratio among the target quantizer step sizes set for the different picture types is a predetermined one, said control operation not being totally depending on the allocation of quantity of the target amount of codes based on the global complexity measure for each of the picture, but in accordance with features of the sequence of moving pictures; and

encoding means for encoding said each picture included in said sequence of moving pictures including said each picture using said quantizer step size furnished by said encoding control means and using either said each picture or prediction from a past intra-coded image and/or a predictive coded picture.

Claim 2. The moving picture encoding system according to claim 1, wherein said encoding control means initially sets the quantizer step size for a

macroblock to be encoded first in said each picture currently being encoded to the target quantizer step size set for the picture type of said each picture currently being encoded, and then, each time it encodes each of macroblocks remaining in said each picture currently being encoded, updates the quantizer step size initially set for the first macroblock so that the average of the quantizer step sizes used during the encoding of all macroblocks in said each picture finally approaches the target quantizer step size set for the picture type of said each picture currently being encoded.

Claim 3. The moving picture encoding system according to Claim 1, wherein said encoding control means further extracts the feature of said sequence of moving pictures to be encoded which represents a degree of complexity of said sequence of moving pictures to be encoded, and wherein said encoding control means adaptively updates said ratio among the target quantizer step sizes set for the different types of pictures according to said extracted feature of said sequence of moving pictures.

Claim 4. The moving picture encoding system according to Claim 2, wherein said encoding control means further extracts the feature of said sequence of moving pictures to be encoded which represents a degree of complexity of said sequence of moving pictures to be encoded, and wherein

said encoding control means adaptively updates said ratio among the target quantizer step sizes set for the different types of pictures according to said extracted feature of said sequence of moving pictures.

Claim 5. The moving picture encoding system according to Claim 1, wherein said encoding control means determines whether an amount of codes to be generated when encoding said each picture in the unit group will deviate by a predetermined range or even more from a target amount of generated codes for said each picture if the encoding is carried out using the target quantizer step sizes set for the plurality of picture types, and wherein, if said encoding control means determines that such a deviation from the target amount of generated codes will occur, said encoding control means updates the target quantizer step sizes set for the different types of pictures.

Claim 6. The moving picture encoding system according to Claim 2, wherein said encoding control means determines whether an amount of codes to be generated when encoding said each picture in the unit group will deviate by a predetermined range or even more from a target amount of generated codes for said each picture if the encoding is carried out using the target quantizer step sizes set for the plurality of picture types, and wherein, if said encoding control means determines that 'such a deviation from the target

amount of generated codes will occur, said encoding control means updates the target quantizer step sizes set for the different types of pictures.

Claim 7. The moving picture encoding system according to Claim 1, wherein said encoding control means further extracts the feature of said sequence of moving pictures to be encoded which represents a degree of complexity of said sequence of moving pictures to be encoded, and determines whether a scene change has occurred during the encoding of said each picture included in said unit group, and wherein, if said encoding control means determines that a scene change has occurred during the encoding of said each picture, it updates said ratio among the target quantizer step sizes set for the different types of pictures and their values according to the extracted feature of said sequence of moving pictures.

Claim 8. The moving picture encoding system according to Claim 2, wherein said encoding control means further extracts the feature of said sequence of moving pictures to be encoded which represents a degree of complexity of said sequence of moving pictures to be encoded, and determines whether a scene change has occurred during the encoding of said each picture included in said unit group, and wherein, if said encoding control means determines that a scene change has occurred during the encoding of said each

picture, it updates said ratio among the target quantizer step sizes set for the different types of pictures and their values according to the extracted feature of said sequence of moving pictures.

Claim 9. The moving picture encoding system according to Claim 1, wherein said encoding control means determines whether a scene change has occurred during the encoding of said each picture included in said unit group, and wherein, if said encoding control means determines that a scene change has occurred during the encoding of said each picture, it adaptively changes the type of the current picture currently being encoded in which the scene change occurs and also updates said ratio among the target quantizer step sizes for the different types of pictures and their values.

Claim 10. The moving picture encoding system according to Claim 2, wherein said encoding control means determines whether a scene change has occurred during the encoding of said each picture included in said unit group, and wherein, if said encoding control means determines that a scene change has occurred during the encoding of said each picture, it adaptively changes the type of the current picture currently being encoded in which the scene change occurs and also updates said ratio among the target quantizer step sizes for the different types of pictures and their values.

Claim 11. A moving picture encoding system according to Claim 1, wherein said encoding control means only uses an amount of-generated-codes-versus-quantizer-step-size characteristic of pictures of a certain type in order to set the target quantizer step sizes used to encode the different types of pictures which are to be encoded with the different encoding methods.

Claim 12. The moving picture encoding system according to Claim 2, wherein said encoding control means only uses an amount-of-generated-codes-versus-quantizer-step-size characteristic of pictures of a certain type in order to set the target quantizer step sizes used to encode the different types of pictures which are to be encoded with the different encoding methods.

Claim 13. The moving picture encoding system according to Claim 1, wherein when said unit group includes a picture to be intra-coded or an I-picture, a picture to be predictive-coded or a P-picture, and a picture to be bidirectionally –predictive-coded or a B-picture, said encoding control means extracts the feature of said sequence of moving pictures which represents a degree of complexity of said sequence of moving pictures to be encoded, and wherein if the extracted feature of said sequence of moving pictures indicates that the amount of motion between pictures is relatively small, said encoding

control means sets the amounts of generated codes assigned to each I-picture, each P-picture, and each B-picture within said unit group so that the amount of generated codes assigned to each I-picture is the largest, the amount of generated codes assigned to each P-picture is the second-largest, and the amount of generated codes assigned to each B-picture is the smallest, and, as the amount of motion between pictures represented by the extracted feature increases, updates said ratio among the target quantizer step sizes for the different types of pictures so that the differences among the amount of generated codes assigned to each I-picture, each P-picture, and each B-picture are reduced.

Claim 14. The moving picture encoding system according to Claim 2, wherein when said unit group includes a picture to be intra-coded or an I-picture, a picture to be predictive-coded or a P-picture, and a picture to be bidirectionally- predictive-coded or a B-picture, said encoding control means extracts the feature of said sequence of moving pictures which represents a degree of complexity of said sequence of moving pictures to be encoded, and wherein if the extracted feature of said sequence of moving pictures indicates that the amount of motion between pictures is relatively small, said encoding control means sets target amounts of generated codes allocated to each I-picture, each P-picture, and each B-picture in said unit group so that the

target amount of generated codes allocated to each I-picture, is the largest, the target amount of generated codes allocated to each P-picture is the second-largest, and the target amount of generated codes allocated to each B-picture is the smallest, and, as the mount of motion between pictures represented by the extracted feature increases, updates said ratio among the target quantizer step sizes for the different types of pictures so that the differences among the target amounts of generated codes allocated to each I-picture, each P-picture, and each B-picture are reduced.